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ABSTRACT

As technological changes in the delivery of instruction overtake colleges, thought needs to be given to maintaining the fundamental principles of adult education, especially regarding the role of the learner in the educational process. The trend toward electronically distributed education will make college a network of resources, rather than a place, while the widespread use of new technologies can be expected to improve the quality of instruction and alter the roles and responsibilities of faculty. As part of a doctorate in Educational Leadership and Higher Education, the University of Nebraska-Lincoln offers doctoral courses via distributed education, which as opposed to distance education is designed to improve the teaching-learning process rather than enhance existing systems. Using computer groupware and a programmed set of questions for discussion, students engage in virtual interaction and collaboration, while the teacher's role is to lead the group through a search for shared meaning. Major features of this form of distributed education include: (1) learning is based on dialogue in virtual interactive groups; (2) participants can access the group at their own convenience; (3) responses, comments, and arguments are written without the pressure of instant response; (4) collaboration is greatly improved over classroom-based instruction, since all students must participate; (5) problems of the classroom approach, such as gender dominance issues, minority barriers, and physical disadvantages, are also eliminated; and (6) poor student performance cannot be disguised. (HAA)

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THE VIRTUAL CLASSROOM:

WHAT WORKS?

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Dr. Seagren received the B.D., M.Ed., and Ed.D. degrees from the University of Nebraska-Lincoln. He began his professional career as a public school teacher and administrator. Following receipt of the doctorate, he became an Assistant Professor of Education at Colorado State University, Fort Collins, Colorado. In 1963, he joined the faculty of Teachers College at UNL as Principal of University High School, and Associate Professor of Educational Administration and Secondary Education. In 1974, he became Assistant Vice Chancellor for Academic Affairs, and was responsible for developing an innovative academic planning, program review, process focussed on improving program quality and people development for the UNL campus. In October 1980, he joined university-wide administration as the Vice President for Administration, a position he held for twelve years. In June of 1992, he returned to full-time teaching in Teachers College as a Professor of Educational Administration and Curriculum and Instruction, Director of the Center for the Study of Higher and Postsecondary Education and Coordinator of International Education. He has co-authored three books related to the position of chair with Dr. John Creswell and Dr. Dan Wheeler. *The Academic Chairperson Handbook* (1990), *The Chairperson: New Roles, Responsibilities and Challenges* (1993), and *Academic Leadership in Community Colleges* (1994). He has extensive international experience, has been active in professional associations, AERA, AAHE, ASHE, PDK, NCPEA, and has served as an officer in SCUP, AUSS, NCCSS, and NASULGC's Council of Business Officers. He also has served as a member of the Board of Directors on a number of community agencies and church boards. For the past several years he has been an Institute Staff member for the National Community College Chair Academy. Under his leadership, a distributed education doctoral program in Educational Leadership and Higher Education has been developed at UNL using *Lotus Notes*.

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Dr. Britt Watwood is the Associate Dean of Academic Affairs at Herkimer County Community College in the foothills of the Adirondack Mountains in upstate New York. At the college on the hill, he oversees 56 full-time faculty in the areas of Business, Health Services, Science, Mathematics, and Physical Education. A graduate of the U. S. Naval Academy, Britt received his Masters degree in Education from Old Dominion University and a Doctor of Education degree in Educational Leadership in Higher Education from University of Nebraska. He is also a 1996 graduate of the Institute for Academic Leadership Development. He has been a consultant in quality initiatives and strategic planning, and his recent research has been on the role played by community college chairs in leading their colleges' quality initiatives. Britt retired from the Navy as a Commander after 22 years of service. For the past two years, before moving to New York, he was the Assistant Director of the Center for the Study of Higher and Postsecondary Education at UNL. His research there was on quality improvement, with particular emphasis on the application of the Malcolm Baldrige National Quality Award to higher education. He also worked on technological applications to education, and helped design and deliver graduate courses via *Lotus Notes* in UNL's Distant Doctorate program. He and his wife, Linda, reside in Herkimer.

The Virtual Classroom - What Works?

INTRODUCTION

Andy Kohen, in a September 15, 1995 Internet posting, noted that the computer "has extended the 'classroom' beyond the four walls and 150 minutes/week that constrain us according to official scheduling." Kohen's comment illustrates the fundamental change that must occur as electronic distributed instruction becomes more common for colleges and universities. Community colleges typically think in terms of other local colleges as their competition, but the competition is expanding as electronic access makes distance a moot point. One of our keynote speakers discusses the potential of Disney and Microsoft taking a share of the postsecondary education pie. Two year colleges in South Australia are shifting 30% of their instruction to the Internet by the year 2000. Brevard Community College in Florida is already offering full Associate Degree programs via America On-Line on the Internet. As these changes in the delivery of instruction overtakes community colleges, thought needs to be given to maintaining the fundamental principles of adult education, especially regarding the role of the learner in the educational process.

ELECTRONICALLY DISTRIBUTED EDUCATION

Electronically distributed education is not a new concept. The Virginia Commission on the University of the Twenty-First Century reported that higher education is evolving as follows (Potter and Chickering, 1991):

- College will be a network of resources, not a place.
- Offerings will give students a global, multicultural perspective.
- Widespread use of new technologies will improve the quality of instruction, increase contact between students and faculty, and reduce constraints on time, place, and space.
- Living and learning will be more closely integrated outside the classroom.
- Teaching will be more responsive to individual differences.
- Faculty roles, responsibilities, and rewards will change.
- Colleges and universities will be increasingly interdependent with other educational providers and the private sector.

Turoff detailed some of the changes occurring in the "virtual classroom" (Harasim, 1990, p. ix):

- Students and instructors do not have to meet at the same time because the computer stores their communications. On-line education is available at any hour of any day.
- Students can communicate with one another to promote collaborative learning. This is understood to be as important a part of the learning process as student-teacher communication.
- Students anywhere in the world can be part of a single class. Teachers can be anywhere in the world and still team-teach a course.
- The computer provides specialized communication that can actually improve what is done

face-to-face in classes.

- The technology is inherently cheaper than telephone or video conferencing for providing communications.

THE DISTRIBUTED EDUCATION PROJECT OF UNL

The faculty of the Department of Educational Administration at the University of Nebraska-Lincoln is offering doctoral courses in a distributed manner via computer as part of an approved doctorate in Educational Leadership and Higher Education. The delivery process of this program aims to improve the higher education teaching - learning process by employing a methodology which is clearly linked to the purposes of higher education, learning theory, and available technology in a meaningful manner. It is a departure from many educational technology initiatives which are driven by a desire to use new information or communication technologies as enhancements to existing teaching - learning situations.

As the world moves into the information age, the emerging political, social, and economic environments demand that higher education increase its learning productivity if it is to continue to enjoy public support. The dollars available for education are decreasing at all levels, forcing institutions to deal with the issues of efficiency and effectiveness, without lowering quality. Most institutions still equate distance education with interactive television, which is expensive to operate and still restricts individuals to time and place constraints. The authors believe that higher education must respond to changing customer expectations. Students want high quality learning experiences delivered to them at reasonable cost and at their convenience, that is, their choice of time and place. The project was therefore directed towards the development of teaching - learning that was both pedagogically sound and cost-effective.

At the start, several major considerations were made. First, technology in the form of more and improved presentation of information was not seen as necessarily improving the teaching - learning process. Of course, more information widens learning opportunities, but without interaction, learning is not enhanced. There are a range of inter-active methodologies available, such as the widely used interactive television, but they typically did not free the student of time and space considerations. Second, the decision was made to use a direct call off-line system rather than Internet for computer instruction. While the Internet was considered because of its capacity for a degree of interactivity and its wide use for teaching purposes throughout the world, many adults in the areas served by this land-grant institution lived in rural areas (or international sites) that were still not served by Internet connectivity in 1993, and much of the existing software for Internet interaction did not facilitate conversational active teaching - learning dialogue. Finally, packaged correspondence/video courses, while widely used for distance education, do not meet two important learning components: (1) student/instructor interaction and (2) class collaboration.

A distributed education methodology was therefore developed which enables courses to be taught through virtual interaction and collaboration. The method is based on computer groupware, in this case *Lotus Notes*, which provides for open interaction between group members. The programming consists of questions designed to promote discussion as each student response is shared with other group members. The teacher's role is to work with the group and lead it through the search for shared meaning.

THE DISTRIBUTED EDUCATION METHOD

The world of tomorrow will be increasingly interconnected electronically. Students of all ages are already cruising the Internet, and the potential good that comes from democratic access to information gives hope for the future of the world. Senge (1994) noted that computers, TV's, encyclopedias, and modems have eclipsed the power of the classroom to provide information. As an indicator of the growth taking place in electronically distributed information, the World Wide Web grew from 623 sites in December 1993 to 11,576 sites in December 1994 (Cartwright and Barton, 1995). The latest projections place the number of Internet sites at over two million by the end of the decade.

Distributed education is not distance education, because it is based on the creation of a learning dialogue between participants in collaborative learning groups - no matter the participants' locations or time in which they choose to interact. The method is based on creating and sharing documents among a learning group. While currently text based, it still incorporates multiple learning pathways, through the use of higher level activities, visually pleasing presentations, use of small group interaction, and multiple conversational opportunities (the "Classroom"/the "Cafeteria"/the "Office", etc.)

The course material is set out in modular form, each module with a set of readings, questions and assignments requiring response from individual students or from small groups. Students write their responses and send them to the virtual class meeting by a process of database replication which distributes all documents to all class members, including the teaching staff. Each student is expected to comment constructively on approximately 20% of the other group members presentations as a means of promoting interaction and maintaining the teaching dialogue.

In this distributed project, students, using their own computers and college-supplied software, logged into the computer server at the time of their choosing, replicated (in under 3 minutes) the databases containing instructional work and work by their fellow students, then worked off-line to complete assignments and respond to other students. All of the comments made by Turoff above were true of the UNL distributed classes. Education (and learning) was available 24 hours a day. Students learn from each other as much (or more) than they learned from the professors. Distance and location became a moot point. Students were located throughout the 400-mile width of Nebraska, in 5 other states and as far away as Canada, Guam and Australia. It was particularly interesting to watch students of the various cultures (Midwest North America, Pacific Island, and Australia) interact and learn from each other! The written responses from the student appeared to contain thoughts from a deeper level of cognition than those verbalized in a face-to-face class, and inhibitors of gender, personal appearance, and the like disappeared in this virtual class. One professor "teaching" the course taught from Australia; the others from Lincoln. Finally, the students using this software praised it as a lower cost (from the student perspective) way of obtaining an education because of savings in travel time and costs.

Typically, a semester course has around seven modules. Three or four assignments/questions for each module are usual. A group size of about fifteen to twenty appears to provide the best balance of interaction in magnitude and scope. Larger numbers become unwieldy due to the high number of responses, while smaller groups tend to lose

momentum due to the low number of interactions.

The major features of this form of distributed education are:

1. Learning is based on dialogue in virtual interactive groups.
2. Students and instructors do not have to meet at set times and at set places to create and maintain a learning dialogue, because the computer receives and stores contributions that can be accessed at the convenience of all participants.
3. Responses, comments, and arguments are written without the pressure of instant response. Reflection and thoughtful expression are facilitated.
4. The learning conditions are such that collaboration is made possible to an extent rarely attained in classroom situations. In a typical class setting, a professor may get one or two responses to a question, with one or two lateral discussions by classmates. Here, all students respond to the question, then all critique and discuss several of their classmates' responses.
5. The mechanics of distributed education are facilitated by the groupware, but forethought should be given to the planned outcome objectives and the means to achieve these objectives without face-to-face interaction.. Once the course is designed, only basic levels of computer literacy are required, and only minor programming is necessary to adapt the database templates supplied with the Lotus Notes software.
6. Many of the lesser desirable characteristics of classroom teaching are removed. These include gender dominance issues, minority/multicultural barriers, physical disadvantages, and disruptive behavior.
7. Quality concerns are always an issue. However, provision can readily be made for course monitoring, and a full record of the class transactions are recorded on the class meeting database. In fact, the software facilitates the monitoring of class participation.
8. Poor student performance cannot be disguised. There is nowhere to hide in the virtual class, a situation not always the case in the traditional classroom.

SUMMARY

Turoff warned that the most serious bottleneck to the introduction of this technology in colleges and universities is not the technology itself nor the costs involved, nor the adaptability of the students, but the retraining and adaptability of the faculty (Harasim, 1990). One concern is that, as faculty move forward, they will continue to be fixated on the technology and not on its application. While the authors saw wonderful results with this project, it appeared to have adult learners who were self-motivated and self-actualizers. These may not be representative students for large scale adoption of this technology, particularly at the Masters or undergraduate level. Both students and faculty are going to have to unlearn past practices in order to succeed in the active learning mode of the future. This process involves profound change, and change is uncomfortable to most.

Felder (1995) stated that it is a reasonable premise that students learn more by doing things than watching a professor and listening to lectures. The authors concur. Learning is enhanced through interactive collaborative dialogue, but university courses must be redesigned to match this new mode of learning, and the collective body of educators need to begin seriously discussing how to make this change. Distributed education offers a wonderful tool to enrich all

of the global society. All educators must work collectively to see that it reaches its potential.

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